at least one mobile station located within the cell, comprising the steps of:

defining downlink logical channels from the base station to the cell, the downlink logical channels being defined to comprise information channels designated for information transmission, the downlink logical channels using the downlink time slots,

defining downlink control channels which include at least one of a paging channel (FP) and an acknowledgement channel (A), of which on the paging channel the base station notifies a mobile station located within the cell of an incoming packet data transmission that is addressed to the mobile station, as well as information channels for transmitting the incoming packet data, the downlink control channels also using the downlink time slots,

defining uplink logical channels from the mobile station to the base station, the uplink logical channels being defined to comprise information channels reserved for information transmission and a reservation request channel (R), the uplink logical channels using the uplink time slots,

making a request to the base station from the mobile station on the reservation request channel to reserve a connection for transmitting packet data, and

acknowledging the request by the base station on the acknowledgement channel by identifying those information

channels on which the mobile station is to transmit packet data, wherein

in the TDMA frames there is assigned at any given time a variable number of time slots designated for packet data transmission, the number of assigned time slots being a function of one of a symmetricity and an asymmetricity of the packet data transmission, and also on a total demand for packet data transmission in the cell, and wherein

any of the downlink time slots in the TDMA frame assigned for packet data transmission can be used for the paging (FP) channel and the acknowledgement (A) channel, and any of the uplink time slots in the TDMA frame that are assigned for packet data transmission can be used for the reservation request (R) channel.

2. A method according to claim 1, wherein on each time slot, transmitted data is subjected to the same interleaving and error correction algorithm, and wherein respective time slots of consecutive TDMA frames constitute independent logical sub-channels which are reserved for a mobile station according to need, and to which the packet data is applied at the beginning of the transmission and wherefrom it is again composed after the transmission.

3. A method according to claim 1, wherein the base station acknowledges the reservation request on a downlink time slot which corresponds to an uplink time slot wherein the request was transmitted, and in the event that the corresponding downlink time slot is occupied for transmitting information to

another mobile station, the corresponding downlink time slot is stolen to be used as an acknowledgment time slot, and the information is transmitted later to the another mobile station.

4. A method according to claim 1, wherein the reservation request is an access burst, and wherein in an information bit part of the access burst there is encoded 12 databits by 1/2 FEC (Forward Error Correction) coding.

5. A method according to claim 1, wherein for a case where the transmission is asymmetric and terminated at the mobile station, the base station indicates to the mobile station on the paging channel on which downlink slots the packet data is transmitted such that a channel is reserved in only one direction at a time for the mobile station, while the time slots of the uplink TDMA frame are available for use by other mobile stations that are located in the cell.

6. A method according to claim 1, wherein for a case where the transmission is asymmetric and originated by the mobile station, the mobile station requests the base station to reserve a connection, which request is acknowledged by the base station on a respective acknowledgement time slot, and at the same time the base station allocates uplink information time slots in which the originating mobile station transmits packet data, wherein information time slots are not reserved in the downlink direction and are available for other use.

7. A method according to claim 6, wherein for each TDMA frame, after the mobile station has transmitted packet data in

the allocated time slots, the base station transmits an acknowledgement on a downlink acknowledgement time slot.

8. A method according to claim 1, wherein for the case where the transmission is symmetric and is originated by or terminated by the mobile station, the transmission of packet data alternates on corresponding uplink and downlink time slots.

9. A method according to claim 1, wherein for the case where the transmission is symmetric and is originated by or terminated by the mobile station, only data packets are transmitted in one direction, and only acknowledgements are transmitted in the opposite direction.

10. A method according to claim 9, wherein the transmission of data packets and the corresponding acknowledgements are transmitted so as to alternate on corresponding uplink and downlink time slots.

11. A method according to claim 1, wherein a mobile station that is capable of packet transmission with fewer time slots than are supported by the base station, the mobile station performs a step of determining a number of time slots to use during a TDMA frame.

12. A method according to claim 1, wherein for packet data transmission there are reserved two time slots, one of which is reserved for transmitting control information and the other of which is reserved for transmitting the packet data.

13. A method according to claim 1, wherein for packet data transmission there are reserved two time slots, one of which is reserved solely for transmitting the packet data and the other of which is reserved for transmitting both control information and also the packet data.

14. A method according to claim 13, wherein for the case where the information time slots are reserved for some other use, the information time slots are stolen for transmitting packet data, and wherein if control time slots are not needed, the unneeded control time slots are used for transmitting packet data.

15. A method for transmitting packet data in the air interface of a digital cellular system based on time division multiple access (TDMA) having uplink and downlink time slots a plurality of which comprise an uplink and a downlink TDMA frame, respectively, comprising the steps of:

defining downlink logical channels from a base station to a cell served by the base station, the downlink logical channels being defined to comprise information channels and control channels, the downlink logical channels using the downlink time slots; and

defining uplink logical channels from a mobile station to a base station, the uplink logical channels being defined to comprise information channels reserved for information transmission and a reservation request channel (R), on which the mobile station requests the reservation of a

connection for transmitting packet data, the uplink logical channels using the uplink time slots; wherein

in the TDMA frames a variable number of time slots are allocated for packet data transmission, the number of assigned time slots being a function of one of a symmetricity and an asymmetricity of the packet data transmission, and also on a total demand for packet data transmission in the cell.

16. A method according to claim 1, wherein for packet data transmission there are reserved n time slots, one of which is reserved for transmitting control information and packet data and the other of which is reserved solely for transmitting the packet data.

17. A method for transmitting packet data in the air interface of a digital cellular system based on time division multiple access (TDMA) having uplink and downlink time slots a plurality of which comprise an uplink and a downlink TDMA frame, respectively, comprising the steps of:

defining downlink logical channels from a base station to a cell served by the base station, the downlink logical channels being defined to comprise information channels and control channels, the downlink logical channels using the downlink time slots; and

defining uplink logical channels from a mobile station to a base station, the uplink logical channels being defined to comprise information channels reserved for information

transmission and a reservation request channel (R), on which the mobile station requests the reservation of a connection for transmitting packet data, the uplink logical channels using the uplink time slots; wherein

in the TDMA frames a variable number of time slots are allocated for packet data transmission, the number of assigned time slots being a function of one of a symmetricity and an asymmetricity of the packet data transmission, and also on a total demand for packet data transmission in the cell, and wherein

for packet data transmission there are reserved n time slots, one of which is reserved for transmitting control information and packet data and the other of which is reserved solely for transmitting the packet data.

18. A method for transmitting packet data in the air interface of a digital cellular system based on time division multiple access (TDMA) having uplink and downlink time slots a plurality of which comprise an uplink and a downlink TDMA frame, respectively, comprising the steps of:

defining downlink logical channels from a base station to a cell served by the base station, the downlink logical channels being defined to comprise information channels and control channels, the downlink logical channels using the downlink time slots; and

defining uplink logical channels from a mobile station to a base station, the uplink logical channels being defined

to comprise information channels reserved for information transmission and a reservation request channel (R), on which the mobile station requests the reservation of a connection for transmitting packet data, the uplink logical channels using the uplink time slots; wherein

in the TDMA frames a variable number of time slots are allocated for packet data transmission, the number of assigned time slots being a function of one of a symmetricity and an asymmetricity of the packet data transmission, and also on a total demand for packet data transmission in the cell, and wherein

the base station acknowledges the mobile station's reservation request on a downlink time slot which corresponds to an uplink time slot wherein the reservation request was transmitted, and in the event that the corresponding downlink time slot is assigned for transmitting information to another mobile station, the corresponding downlink time slot is stolen by the base station for use in transmitting the acknowledgment time slot, and the information is transmitted later to the other mobile station.

19. A method for transmitting packet data in the air interface of a digital cellular system based on time division multiple access (TDMA) having uplink and downlink time slots a plurality of which comprise an uplink and a downlink TDMA frame, respectively, comprising the steps of:

defining downlink logical channels from a base station to a cell served by the base station, the downlink logical channels being defined to comprise information channels and control channels, the downlink logical channels using the downlink time slots; and

defining uplink logical channels from a mobile station to a base station, the uplink logical channels being defined to comprise information channels reserved for information transmission and a reservation request channel (R), on which the mobile station requests the reservation of a connection for transmitting packet data, the uplink logical channels using the uplink time slots; wherein

in the TDMA frames a variable number of time slots are allocated for packet data transmission, the number of assigned time slots being a function of one of a symmetricity and an asymmetricity of the packet data transmission, and also on a total demand for packet data transmission in the cell, and wherein

for the case where the transmission is symmetric and is originated by or terminated by the mobile station, only data packets are transmitted in one direction, and only acknowledgements are transmitted in the opposite direction.

20. A method according to claim 25, wherein the respective number of time slots is also dependent upon a total demand for packet data transmission in the cell.

71 34

~~21~~. A method according to claim ~~39~~, wherein the respective number of time slots is also dependent upon a total demand for packet data transmission in the cell.

A1 Cont'd.

72 36

~~22~~. A method according to claim ~~41~~, wherein the respective number of time slots is also dependent upon a total demand for packet data transmission in the cell.

73 37

~~23~~. A method according to claim ~~42~~, wherein the respective number of time slots is also dependent upon a total demand for packet data transmission in the cell.

74 38

~~24~~. A method according to claim ~~43~~, wherein the respective number of time slots is also dependent upon a total demand for packet data transmission in the cell.

A2 20

~~25~~. A method for transmitting packet data in the air interface of a digital cellular system based on time division multiple access (TDMA), the system comprising a communications network having at least one base station which serves a cell with wireless bidirectional communications using uplink and downlink time slots a plurality of which comprise an uplink and a downlink TDMA frame, respectively, the system further having at least one mobile station located within the cell, comprising the steps of:

defining downlink logical channels from the base station to the cell, the downlink logical channels being defined to comprise information channels designated for information transmission, the downlink logical channels using the downlink time slots,

defining downlink control channels which include at least one of a paging channel (FP) and an acknowledgement channel (A), of which on the paging channel the base station notifies a mobile station located within the cell of an incoming packet data transmission that is addressed to the mobile station, as well as information channels for transmitting the incoming packet data, the downlink control channels also using the downlink time slots,

A2 cont.

defining uplink logical channels from the mobile station to the base station, the uplink logical channels being defined to comprise information channels reserved for information transmission and a reservation request channel (R), the uplink logical channels using the uplink time slots,

making a request to the base station from the mobile station on the reservation request channel to reserve a connection for transmitting packet data, and

acknowledging the request by the base station on the acknowledgement channel by identifying those information channels on which the mobile station is to transmit packet data, wherein

in the TDMA frames there is assigned at any given time a variable number of time slots designated for packet data transmission, the number of assigned time slots being a function of one of a symmetricity and an asymmetricity of the packet data transmission, and wherein

any of the downlink time slots in the TDMA frame assigned for packet data transmission can be used for the paging (FP) channel and the acknowledgement (A) channel, and any of the uplink time slots in the TDMA frame that are assigned for packet data transmission can be used for the reservation request (R) channel.

21 ~~26~~. A method according to claim 20 ~~25~~, wherein on each time slot, transmitted data is subjected to the same interleaving and error correction algorithm, and wherein respective time slots of consecutive TDMA frames constitute independent logical sub-channels which are reserved for a mobile station according to need, and to which the packet data is applied at the beginning of the transmission and wherefrom it is again composed after the transmission.

22 ~~27~~. A method according to claim 20 ~~25~~, wherein the base station acknowledges the reservation request on a downlink time slot which corresponds to an uplink time slot wherein the request was transmitted, and in the event that the corresponding downlink time slot is occupied for transmitting information to another mobile station, the corresponding downlink time slot is stolen to be used as an acknowledgment time slot, and the information is transmitted later to the another mobile station.

23 ~~28~~. A method according to claim 20 ~~25~~, wherein the reservation request is an access burst, and wherein in an information bit part of the access burst there is encoded 12 databits by 1/2 FEC (Forward Error Correction) coding.

24 29. A method according to claim 20 25, wherein for a case where the transmission is asymmetric and terminated at the mobile station, the base station indicates to the mobile station on the paging channel on which downlink slots the packet data is transmitted such that a channel is reserved in only one direction at a time for the mobile station, while the time slots of the uplink TDMA frame are available for use by other mobile stations that are located in the cell.

12 Cont. 25 30. A method according to claim 26 25, wherein for a case where the transmission is asymmetric and originated by the mobile station, the mobile station requests the base station to reserve a connection, which request is acknowledged by the base station on a respective acknowledgement time slot, and at the same time the base station allocates uplink information time slots in which the originating mobile station transmits packet data, wherein information time slots are not reserved in the downlink direction and are available for other use.

26 31. A method according to claim 25 30, wherein for each TDMA frame, after the mobile station has transmitted packet data in the allocated time slots, the base station transmits an acknowledgement on a downlink acknowledgement time slot.

27 32. A method according to claim 20 25, wherein for the case where the transmission is symmetric and is originated by or terminated by the mobile station, the transmission of packet data alternates on corresponding uplink and downlink time slots.

28 ~~33~~. A method according to claim 20 ~~25~~, wherein for the case where the transmission is symmetric and is originated by or terminated by the mobile station, only data packets are transmitted in one direction, and only acknowledgements are transmitted in the opposite direction.

29 ~~34~~. A method according to claim 28 ~~33~~, wherein the transmission of data packets and the corresponding acknowledgements are transmitted so as to alternate on corresponding uplink and downlink time slots.

12 Cont.

30 ~~35~~. A method according to claim 20 ~~25~~, wherein a mobile station that is capable of packet transmission with fewer time slots than are supported by the base station, the mobile station performs a step of determining a number of time slots to use during a TDMA frame.

31 ~~36~~. A method according to claim 20 ~~25~~, wherein for packet data transmission there are reserved two time slots, one of which is reserved for transmitting control information and the other of which is reserved for transmitting the packet data.

32 ~~37~~. A method according to claim 20 ~~25~~, wherein for packet data transmission there are reserved two time slots, one of which is reserved solely for transmitting the packet data and the other of which is reserved for transmitting both control information and also the packet data.

33 ~~38~~. A method according to claim 32 ~~37~~, wherein for the case where the information time slots are reserved for some other use, the information time slots are stolen for transmitting

packet data, and wherein if control time slots are not needed, the unneeded control time slots are used for transmitting packet data.

39. A method for transmitting packet data in the air interface of a digital cellular system based on time division multiple access (TDMA) having uplink and downlink time slots a plurality of which comprise an uplink and a downlink TDMA frame, respectively, comprising the steps of:

defining downlink logical channels from a base station to a cell served by the base station, the downlink logical channels being defined to comprise information channels and control channels, the downlink logical channels using the downlink time slots; and

defining uplink logical channels from a mobile station to a base station, the uplink logical channels being defined to comprise information channels reserved for information transmission and a reservation request channel (R), on which the mobile station requests the reservation of a connection for transmitting packet data, the uplink logical channels using the uplink time slots; wherein

in the TDMA frames a variable number of time slots are allocated for packet data transmission, the number of assigned time slots being a function of one of a symmetricity and an asymmetricity of the packet data transmission.

36 ~~40~~. A method according to claim 34 ~~39~~, wherein for packet data transmission there are reserved n time slots, one of which is reserved for transmitting control information and packet data and the other of which is reserved solely for transmitting the packet data.

Subj. D2 Cont.

41. ~~A~~ method for transmitting packet data in the air interface of a digital cellular system based on time division multiple access (TDMA) having uplink and downlink time slots a plurality of which comprise an uplink and a downlink TDMA frame, respectively, comprising the steps of:

defining downlink logical channels from a base station to a cell served by the base station, the downlink logical channels being defined to comprise information channels and control channels, the downlink logical channels using the downlink time slots; and

defining uplink logical channels from a mobile station to a base station, the uplink logical channels being defined to comprise information channels reserved for information transmission and a reservation request channel (R), on which the mobile station requests the reservation of a connection for transmitting packet data, the uplink logical channels using the uplink time slots; wherein

in the TDMA frames a variable number of time slots are allocated for packet data transmission, the number of assigned time slots being a function of one of a symmetricity and an asymmetricity of the packet data ~~transmission, and wherein~~

for packet data transmission there are reserved n time slots, one of which is reserved for transmitting control information and packet data and the other of which is reserved solely for transmitting the packet data.

37. A method for transmitting packet data in the air interface of a digital cellular system based on time division multiple access (TDMA) having uplink and downlink time slots a plurality of which comprise an uplink and a downlink TDMA frame, respectively, comprising the steps of:

defining downlink logical channels from a base station to a cell served by the base station, the downlink logical channels being defined to comprise information channels and control channels, the downlink logical channels using the downlink time slots; and

defining uplink logical channels from a mobile station to a base station, the uplink logical channels being defined to comprise information channels reserved for information transmission and a reservation request channel (R), on which the mobile station requests the reservation of a connection for transmitting packet data, the uplink logical channels using the uplink time slots; wherein

in the TDMA frames a variable number of time slots are allocated for packet data transmission, the number of assigned time slots being a function of one of a symmetricity and an asymmetricity of the packet data transmission, and wherein

the base station acknowledges the mobile station's reservation request on a downlink time slot which corresponds to an uplink time slot wherein the reservation request was transmitted, and in the event that the corresponding downlink time slot is assigned for transmitting information to another mobile station, the corresponding downlink time slot is stolen by the base station for use in transmitting the acknowledgment time slot, and the information is transmitted later to the other mobile station.

43. A method for transmitting packet data in the air interface of a digital cellular system based on time division multiple access (TDMA) having uplink and downlink time slots a plurality of which comprise an uplink and a downlink TDMA frame, respectively, comprising the steps of:

defining downlink logical channels from a base station to a cell served by the base station, the downlink logical channels being defined to comprise information channels and control channels, the downlink logical channels using the downlink time slots; and

defining uplink logical channels from a mobile station to a base station, the uplink logical channels being defined to comprise information channels reserved for information transmission and a reservation request channel (R), on which the mobile station requests the reservation of a connection for transmitting packet data, the uplink logical channels using the uplink time slots; wherein

in the TDMA frames a variable number of time slots are allocated for packet data transmission, the number of assigned time slots being a function of one of a symmetricity and an asymmetricity of the packet data transmission, and wherein

for the case where the transmission is symmetric and is originated by or terminated by the mobile station, only data packets are transmitted in one direction, and only acknowledgements are transmitted in the opposite ~~direction.~~

44. A method for transmitting packet data in the air interface of a digital cellular system based on time division multiple access (TDMA), the system comprising a communications network having at least one base station which serves a cell with wireless bidirectional communications using uplink and downlink time slots a plurality of which comprise an uplink and a downlink TDMA frame, respectively, the system further having at least one mobile station located within the cell, comprising the steps of:

defining downlink logical channels from the base station to the cell, the downlink logical channels being defined to comprise information channels designated for information transmission, the downlink logical channels using the downlink time slots,

defining downlink control channels which include at least one of a paging channel (FP) and an acknowledgement

channel (A), of which on the paging channel the base station notifies a mobile station located within the cell of an incoming packet data transmission that is addressed to the mobile station, as well as information channels for transmitting the incoming packet data, the downlink control channels also using the downlink time slots,

defining uplink logical channels from the mobile station to the base station, the uplink logical channels being defined to comprise information channels reserved for information transmission and a reservation request channel (R), the uplink logical channels using the uplink time slots,

A2 Cont.

making a request to the base station from the mobile station on the reservation request channel to reserve a connection for transmitting packet data, and

acknowledging the request by the base station on the acknowledgement channel by identifying those information channels on which the mobile station is to transmit packet data, wherein

in the uplink and the downlink TDMA frames there is assigned at any given time a variable number of time slots designated for packet data transmission, the respective number of assigned uplink time slots and downlink time slots being one of an equal number and an unequal number, in dependence upon the demand for packet data transmission in the uplink direction and respectively upon the demand

for packet data transmission in the downlink direction, and wherein

any of the downlink time slots in the TDMA frame assigned for packet data transmission can be used for the paging (FP) channel and the acknowledgement (A) channel, and any of the uplink time slots in the TDMA frame that are assigned for packet data transmission can be used for the reservation request (R) channel.

A2 cont.

40 ~~45~~. A method according to claim 39 ~~44~~, wherein on each time slot, transmitted data is subjected to the same interleaving and error correction algorithm, and wherein respective time slots of consecutive TDMA frames constitute independent logical sub-channels which are reserved for a mobile station according to need, and to which the packet data is applied at the beginning of the transmission and wherefrom it is again composed after the transmission.

41 ~~46~~. A method according to claim 39 ~~44~~, wherein the base station acknowledges the reservation request on a downlink time slot which corresponds to an uplink time slot wherein the request was transmitted, and in the event that the corresponding downlink time slot is occupied for transmitting information to another mobile station, the corresponding downlink time slot is stolen to be used as an acknowledgment time slot, and the information is transmitted later to the another mobile station.

42 ~~47~~. A method according to claim 39 ~~44~~, wherein the reservation request is an access burst, and wherein in an

information bit part of the access burst there is encoded 12 databits by 1/2 FEC (Forward Error Correction) coding.

43 39
~~48~~. A method according to claim ~~44~~, wherein for a case where the transmission is asymmetric and terminated at the mobile station, the base station indicates to the mobile station on the paging channel on which downlink slots the packet data is transmitted such that a channel is reserved in only one direction at a time for the mobile station, while the time slots of the uplink TDMA frame are available for use by other mobile stations that are located in the cell.

A2 cont.

44 39
~~49~~. A method according to claim ~~44~~, wherein for a case where the transmission is asymmetric and originated by the mobile station, the mobile station requests the base station to reserve a connection, which request is acknowledged by the base station on a respective acknowledgement time slot, and at the same time the base station allocates uplink information time slots in which the originating mobile station transmits packet data, wherein information time slots are not reserved in the downlink direction and are available for other use.

45 44
~~50~~. A method according to claim ~~49~~, wherein for each TDMA frame, after the mobile station has transmitted packet data in the allocated time slots, the base station transmits an acknowledgement on a downlink acknowledgement time slot.

46 39
~~51~~. A method according to claim ~~44~~, wherein for the case where the transmission is symmetric and is originated by or terminated by the mobile station, the transmission of packet

data alternates on corresponding uplink and downlink time slots.

47 39
52. A method according to claim 44, wherein for the case where the transmission is symmetric and is originated by or terminated by the mobile station, only data packets are transmitted in one direction, and only acknowledgements are transmitted in the opposite direction.

12 cont.

48 49
53. A method according to claim 52, wherein the transmission of data packets and the corresponding acknowledgements are transmitted so as to alternate on corresponding uplink and downlink time slots.

49 39
54. A method according to claim 44, wherein a mobile station that is capable of packet transmission with fewer time slots than are supported by the base station, the mobile station performs a step of determining a number of time slots to use during a TDMA frame.

50 39
55. A method according to claim 44, wherein for packet data transmission there are reserved two time slots, one of which is reserved for transmitting control information and the other of which is reserved for transmitting the packet data.

51 39
56. A method according to claim 44, wherein for packet data transmission there are reserved two time slots, one of which is reserved solely for transmitting the packet data and the other of which is reserved for transmitting both control information and also the packet data.

52 51

57. A method according to claim 56, wherein for the case where the information time slots are reserved for some other use, the information time slots are stolen for transmitting packet data, and wherein if control time slots are not needed, the unneeded control time slots are used for transmitting packet data.

12 Sub B4 Cont. B4

58. A method for transmitting packet data in the air interface of a digital cellular system based on time division multiple access (TDMA) having uplink and downlink time slots a plurality of which comprise an uplink and a downlink TDMA frame, respectively, comprising the steps of:

defining downlink logical channels from a base station to a cell served by the base station, the downlink logical channels being defined to comprise information channels and control channels, the downlink logical channels using the downlink time slots; and

defining uplink logical channels from a mobile station to a base station, the uplink logical channels being defined to comprise information channels reserved for information transmission and a reservation request channel (R), on which the mobile station requests the reservation of a connection for transmitting packet data, the uplink logical channels using the uplink time slots; wherein

in the uplink and the downlink TDMA frames a variable number of time slots are allocated for packet data transmission, the respective number of assigned uplink time slots and downlink time slots being one of an equal

number and an unequal number, in dependence upon the demand for packet data transmission in the uplink direction and respectively upon the demand for packet data transmission in the downlink direction.

59. A method according to claim 58, wherein for packet data transmission there are reserved n time slots, one of which is reserved for transmitting control information and packet data and the other of which is reserved solely for transmitting the packet data.

60. A method for transmitting packet data in the air interface of a digital cellular system based on time division multiple access (TDMA) having uplink and downlink time slots a plurality of which comprise an uplink and a downlink TDMA frame, respectively, comprising the steps of:

defining downlink logical channels from a base station to a cell served by the base station, the downlink logical channels being defined to comprise information channels and control channels, the downlink logical channels using the downlink time slots; and

defining uplink logical channels from a mobile station to a base station, the uplink logical channels being defined to comprise information channels reserved for information transmission and a reservation request channel (R), on which the mobile station requests the reservation of a connection for transmitting packet data, the uplink logical channels using the uplink time slots; wherein

in the uplink and the downlink TDMA frames a variable number of time slots are allocated for packet data transmission, the respective number of assigned uplink time slots and downlink time slots being one of an equal number and an unequal number, in dependence upon the demand for packet data transmission in the uplink direction and respectively upon the demand for packet data transmission in the downlink direction, and wherein

for packet data transmission there are reserved n time slots, one of which is reserved for transmitting control information and packet data and the other of which is reserved solely for transmitting the packet data.

61. A method for transmitting packet data in the air interface of a digital cellular system based on time division multiple access (TDMA) having uplink and downlink time slots a plurality of which comprise an uplink and a downlink TDMA frame, respectively, comprising the steps of:

defining downlink logical channels from a base station to a cell served by the base station, the downlink logical channels being defined to comprise information channels and control channels, the downlink logical channels using the downlink time slots; and

defining uplink logical channels from a mobile station to a base station, the uplink logical channels being defined to comprise information channels reserved for information transmission and a reservation request channel (R), on which the mobile station requests the reservation of a

connection for transmitting packet data, the uplink logical channels using the uplink time slots; wherein

in the uplink and the downlink TDMA frames a variable number of time slots are allocated for packet data transmission, the respective number of assigned uplink time slots and downlink time slots being one of an equal number and an unequal number, in dependence upon the demand for packet data transmission in the uplink direction and respectively upon the demand for packet data transmission in the downlink direction, and wherein

the base station acknowledges the mobile station's reservation request on a downlink time slot which corresponds to an uplink time slot wherein the reservation request was transmitted, and in the event that the corresponding downlink time slot is assigned for transmitting information to another mobile station, the corresponding downlink time slot is stolen by the base station for use in transmitting the acknowledgment time slot, and the information is transmitted later to the other mobile station.

62. A method for transmitting packet data in the air interface of a digital cellular system based on time division multiple access (TDMA) having uplink and downlink time slots a plurality of which comprise an uplink and a downlink TDMA frame, respectively, comprising the steps of:

defining downlink logical channels from a base station to a cell served by the base station, the downlink logical

channels being defined to comprise information channels and control channels, the downlink logical channels using the downlink time slots; and

defining uplink logical channels from a mobile station to a base station, the uplink logical channels being defined to comprise information channels reserved for information transmission and a reservation request channel (R), on which the mobile station requests the reservation of a connection for transmitting packet data, the uplink logical channels using the uplink time slots;

wherein in the uplink and the downlink TDMA frames a variable number of time slots are allocated for packet data transmission, the respective number of assigned uplink time slots and downlink time slots being one of an equal number and an unequal number, in dependence upon the demand for packet data transmission in the uplink direction and respectively upon the demand for packet data transmission in the downlink direction, and wherein

for the case where the transmission is symmetric and is originated by or terminated by the mobile station, only data packets are transmitted in one direction, and only acknowledgements are transmitted in the opposite direction.

68 39
~~63~~. A method according to claim ~~44~~, wherein the respective number of assigned uplink time slots and downlink time slots

further being dependent upon a total demand for packet data transmission in the cell.

59 53
~~64~~. A method according to claim ~~58~~, wherein the respective number of assigned uplink time slots and downlink time slots further being dependent upon a total demand for packet data transmission in the cell.

60 55
~~65~~. A method according to claim ~~60~~, wherein the respective number of assigned uplink time slots and downlink time slots further being dependent upon a total demand for packet data transmission in the cell.

61 56
~~66~~. A method according to claim ~~61~~, wherein the respective number of assigned uplink time slots and downlink time slots further being dependent upon a total demand for packet data transmission in the cell.

62 57
~~67~~. A method according to claim ~~62~~, wherein the respective number of assigned uplink time slots and downlink time slots further being dependent upon a total demand for packet data transmission in the cell.

12 Cont.

REMARKS

This application has been amended to contain three groups of claims. The first group contains claims 1-19 which are the originally issued patent claims. The second group contains claims 20-43, wherein claims 25-43 are similar to claims 1-19 except that, in the independent claims in the this group, the

limitation of the number of assigned time slots being a function which also depends on the a total demand for packet data transmission in the cell has been removed. The third group contains claims 44-67 and is intended to replace claims 1-24 originally submitted with this reissue application, except that as noted below, several amendments have been made which are believed to overcome the rejections in the Office Action. The remarks below are directed to the third group of claims and address the rejections.

Independent claims 44, 58, 60, 61 and 62 have been amended so that, in each one of these claims the term "a symmetrical" is not used and has been replaced by --an equal--. In addition, the term "asymmetrical" is not used, having been replaced by the term --unequal--. Further, immediately after these changes, for purposes of clarity, a comma has been added.

Claims 1-24 were rejected under 35 U.S.C. 112, second paragraph as being indefinite. It is believed that the amendments made herein now render all of the claims definite. More specifically, the patent explains at col. 7, lines 49-51 that a "symmetric transmission", or "reservation of a radio channel symmetrically" means reserving an equal number of time slots in both directions of transmission. In a similar manner, "asymmetric transmission" is explained in the patent at col. 7, lines 66 to col. 8, line 12. In view of these remarks, it is submitted the claims are now all definite within the meaning of 35 U.S.C. 112.

Claims 20-24 (replaced herein with, for example, claims 63-67) were rejected under 35 U.S.C. 112, first paragraph as not being

supported by the original disclosure. This rejection is respectfully traversed. First, there is specific support in the patent at col. 4, lines 23-34. Further, the limitations of Claims 20-24 may be found in Claim 1 as originally filed. With further specific reference to col. 9, lines 60-63 of the patent, it is clear that there are two options. In a first option the number of time slots allocated is not a function of the total demand for data transmission because the request is queued until a sufficient number of time slots (sufficient free capacity) is found. In a second option, the number of time slots allocated is affected by the total demand for data transmission in the cell, since time slots are allocated based on the amount of time that is free.

Thus, the original specification and patent clearly support two options were the number of assigned time slots is not dependent upon total demand in the cell and where the number of assigned time slots is dependent upon total demand in the cell. Thus, claims similar to Claims 20-24 have clear support in the original specification.

In view of the above, it is respectfully requested that the rejection of Claims 20-24, under 35 U.S.C. 112, first paragraph, be withdrawn.

Claims 1-24 were rejected as being based upon a defective reissue Declaration. In this regard, a Supplemental Reissue Declaration is submitted herewith which specifically identifies the errors relied upon to support the reissue application. It is believed that this Declaration fully satisfies the requirements of 35 U.S.C. 251 and 37 C.F.R. 1.175. It is

Application No.: 09/255,325
Reissue of US 5,640,395

respectfully requested that, when received, the Examiner review this Declaration and reconsider the position taken with respect to this rejection.

Applicants petition for a two month extension of time in which to respond to the Office Action. A check for $1934.00 to cover the fee for the two month extension, and the additional required claim fee for a total of 67 claims, with 15 in independent form is submitted herewith. If any additional fee is required, please charge deposit account no. 16-1350. A duplicate of this page is enclosed.

It is submitted that this application is now in a condition for allowance. Reconsideration and allowance are requested.

Respectfully submitted,

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FEBRUARY 14, 2000

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I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail on the date shown below in an envelope addressed to: Commissioner of Patents and Trademarks, Washington, D.C. 20231.

FEBRUARY 14, 2000
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